CLAIMS:

1. A method comprising:

applying a rectified alternating current (AC) input voltage to a coil in parallel to a high voltage capacitor;

generating a first signal to represent zero-crossings for said AC input voltage;

determining a zero-crossing period using said first signal;

retrieving a dwell time using said zero-crossing period;

generating a second signal using said first signal and said dwell time; and

creating a magnetic field using said coil and high voltage capacitor to deactivate an electronic article surveillance (EAS) in accordance with said second signal.

2. The method of claim 1, wherein said dwell time represents a time interval from a zero-crossing of said AC input voltage to a peak coil current.

3. The method of claim 1, wherein said generating comprises:

retrieving a zero-crossing from said first signal;

measuring a time interval between said zero-crossing and said dwell time; and

generating said second signal to indicate an end of said time interval.

4. The method of claim 1, wherein said creating comprises removing said rectified AC input voltage from said coil in accordance with said second signal to cause an AC current to oscillate between said coil and said high voltage capacitor.

5. The method of claim 1, wherein said oscillation creates a decaying AC current waveform having an amplitude profile sufficient to deactivate said EAS marker.

6. The method of claim 5, wherein said AC current waveform decreases in amplitude over said time interval in accordance with said amplitude profile.

7. The method of claim 3, wherein said decrease in amplitude is exponential.

8. The method of claim 1, further comprising:

detecting said EAS marker; and

sending a detection signal to a zero-crossing detector.

9. An apparatus, comprising:

a zero-crossing circuit to detect zero-crossings of an alternating current (AC) input voltage waveform, and generate a first signal to represent said zero-crossings;

a processor to connect to said zero-crossing circuit, said processor to receive said first signal and retrieve a dwell time based on said first signal, and to generate a second signal using said first signal and said dwell time; and

a coil circuit to connect to said processor, said coil circuit to receive said second signal and create a magnetic field to deactivate an electronic article surveillance (EAS) marker.

10. The apparatus of claim 9, wherein said coil circuit comprises:

an AC voltage source to generate said AC input voltage;

a rectifier to couple to said AC voltage source and convert said AC input voltage to a direct current (DC) input voltage;

a coil to couple to said rectifier;

a high voltage capacitor in parallel with said coil; and

a switch to couple to said coil and receive said second signal, said switch to remove said DC input voltage from said coil in response to said second signal.

12. The apparatus of claim 11, wherein said switch is an insulated gate bipolar transistor (IGBT) switch.

13. The apparatus of claim 12, wherein said IGBT switch is closed to apply said DC input voltage to said coil, and said IGBT switch is opened to remove said DC input voltage from said coil.

14. The apparatus of claim 13, wherein said removing said DC input voltage from said coil in accordance with said second signal causes an AC current to oscillate between said coil and said high voltage capacitor.

15. The apparatus of claim 9, wherein said processor determines a zero-crossing period based on said first signal and uses said zero-crossing period to retrieve said dwell time, with said dwell time to represent a time interval from a zero-crossing of said DC input voltage to a peak coil current.

16. The apparatus of claim 10, wherein said coil comprises an inductor and a parasitic resistor.

17. The apparatus of claim 9, wherein said magnetic field decays over time in accordance with an amplitude profile.

18. The apparatus of claim 17, wherein said decaying magnetic field is proportional to a number of turns in said coil times a peak coil current.

19. The apparatus of claim 9, further comprising a marker detector to detect said EAS marker.

20. An article comprising:

a storage medium;

said storage medium including stored instructions that, when executed by a processor, result in determining a zero-crossing period using a first signal to represent zero-crossings from an alternating current (AC) input voltage waveform, retrieving a dwell time using said zero-crossing period, generating a second signal using said first signal and said dwell period, and sending said second signal to a coil circuit to create a magnetic field to deactivate an electronic article surveillance (EAS) marker.

21. The article of claim 20, wherein the stored instructions, when executed by a processor, further result in said generating by retrieving a zero-crossing time from said first signal, measuring a time interval between said zero-crossing time and said dwell time, and generating said second signal to indicate an end of said time interval.

22. An electronic article surveillance deactivator, comprising:

a zero-crossing circuit to detect zero-crossings of an alternating current (AC) input voltage waveform, and generate a first signal to represent said zero-crossings;

a processor to retrieve a dwell time, and generate a second signal using said first signal and said dwell time; and

a coil circuit to use said second signal to deactivate an electronic article surveillance (EAS) marker using inductive discharge of said AC input voltage.

23. The deactivator of claim 22, wherein said coil circuit comprises:

an AC voltage source to generate said AC input voltage;

a rectifier to couple to said AC voltage source and convert said AC input voltage to a direct current (DC) input voltage;

a coil to couple to said rectifier;

a high voltage capacitor in parallel with said coil; and

a switch to couple to said coil and receive said second signal, said switch to remove said DC input voltage from said coil in response to said second signal.

24. The apparatus of claim 22, further comprising a marker detector to detect said EAS marker.